CLAIMS

process

1. Method for manufacturing an electromechanical sensor element, in which method both surfaces of a sensor film (1) are provided with metallic electrodes (5,6), said sensor element being produced by cutting it from a larger amount of sensor element material, and in which method the electrodes in the manufacture of sensor element material are produced in a continuous process from roll to roll, and in which method the sensor element material is formed by laminating in a continuous process from roll to roll, characterized in that at least the signal electrode consists of a repeated electrode pattern (41), said patterns being at least partially connected together via one or more narrow connecting strips (42), and that the sensor element is formed from the sensor element material by cutting it into a desired length and/or shape across the region of the connecting strips.

2. Method as defined in claim 1, characterized in that the connecting strips provided in the sensor element material form a band-like electrode pattern, and that a band-like sensor element is produced by cutting it from sensor element material having one or more continuous connecting strips (28) of equal width laid side by side.

3. Method as defined in claim 1, characterized in that at least some of the signal electrode patterns are of a polygonal shape.

4. Method as defined in claim 1, characterized in that at least some of the signal electrode patterns comprise round shapes.

5. Method as defined in claim 1, characterized in that the electrode material mainly consists of aluminum.

treat- independent MPEP 2113

6. Sensor element as defined in claim 1, characterized in that it is provided with holes (47).

product

7. Sensor element as defined in claim 1, characterized in that the connecting strips (49) have been laid in a zigzag pattern.

8. Method for manufacturing an electromechanical sensor element, in which method both surfaces of a sensor film (1) are fitted with film-like metallic electrodes (5,6) and the outer surface of at least one of the metallic electrodes is fitted with a film-like dielectric material (2-4), said sensor element being produced by cutting it from a larger amount of sensor element material, characterized in that, in the manufacture of the sensor element material, the electrodes are created by printing a dielectric pattern corresponding to the electrode onto the surface of a metal film on the surface of the dielectric film (2-4) in a continuous processes from roll to roll (31,32) and removing the metallic matter from the areas outside the pattern by etching in a continuous process from roll to roll, and in which method the patterned film and the sensor film are laminated together in a continuous process from roll to roll, and in which at least the signal electrode material has been provided with repeated electrode patterning (41, 44).

9. Method as defined in claim 8, characterized in that the electrode patterns provided in the signal electrode material are at least partially interconnected via narrower connecting strips (42, 46).

10. Method as defined in claim 8, characterized in that at least some of the connecting strips (49) are laid in a zigzag pattern.

11. Method as defined in claim 8, characterized in that the signal electrodes (28) are of a band-like design and in which method a band-like sensor element is produced by cutting it from sensor element material comprising one or more continuous signal electrodes (28) of equal width placed side by side.

12. Method as defined in claim 8, characterized in that at least some of the signal electrode patterns are of a polygonal shape.

13. Method as defined in claim 8, characterized in that at least some of the signal electrode patterns comprise round shapes.

14. Method as defined in claim 8, characterized in that the electrode material is aluminum.

15. Method as defined in claim 8, characterized in that part of the surface of th aluminum electrode has been printed with silver pasta.

16. Electromechanical sensor element, in which both surfaces of a sensor film (1) have been fitted with film-like metallic lectrodes (5,6) and the outer surface of at l ast one of said metallic electrodes has been fitted with a dielectric film (2,3), and in which sensor element at least one of the electrodes is provided with a patterning, characterized in that the sensor element has repeated electrode patterns (41,44), which electrode patterns have been formed from metal.

17. Sensor element as defined in claim 16, characterized in that at least some of the patterns provided in the sensor element are interconnected via narrow connecting strips (42, 46).

18. Sensor element as defined in claim 16, characterized in that at least some of the patterns are of a polygonal shape.

19. Sensor element as defined in claim 16, characterized in that at least some of the patterns comprise round shapes.

20. Sensor element as defined in claim 16, characterized in that it compris s connecting strips at the edge of the signal electrode pattern, said connecting strips consisting of thin strips and wider contact areas at the ends of these.

21. Sensor element as defined in claim 16, characterized in that the electrode material mainly consists of aluminum.

22. Sensor element as defined in claim 16, characterized in that an area has been cut off from at least one of the outer surfaces of the element in a manner such that the incision does not extend through the entire element, in which area a connector has been pressed to make a connection to the signal electrode.

23. Sensor element as defined in claim 20 or 22, characterized in that it comprises insulators placed on both sides of the connection point to which the leads for connection to the sensor element are connected, said insulators being preferably watertight and designed to prevent water and moisture from getting into the connection.

24. Sensor element as defined in claim 16, characterized in that the sensor element is provided with an antenna pattern.

25. Sensor element as defin d in claim 16, characterized in that the connection to the signal electrode has been implemented by making a hole in the sensor element, into which hol a rivet has been pressed, which rivet has been compressed so that it has swollen in outside diameter so that the rivet has made an electric connection via its sides to the signal electrode.

26. Sensor element as defined in claim 16, characterized in that the sensor film consists of an electret bubble film which has first been expanded so that the amount of gas contained in it has been increased to a level exceeding 50%.

27. Sensor element as defined in claim 26, characterized in that the electromechanical sensor film consists of electret bubble film into which has been injected a permanent electric charge in an electric field so intensive that discharges have been produced inside the film.

28. Sensor element as defined in claim 27, which has been pre-aged so that its sensitivity after charging has been reduced by more than 50%.

29. Sensor element as defined in claim 16, which converts a mechanical force applied to the film-like sensor element into electric signals, which comprises film-like metallic electrodes fitted on both surfaces of an active electromechanical sensor film, said electrode patterns having been formed by etching from a metal film, characterized in that the surface material consists of a metal other than copper.

30. Sensor element as defined in claim 27, characterized in that it is connected to a transmitter/receiver unit working in the microwave range.

6-7, 16-30 → class 073, sub 774

1-5, 8-15 → class 029, sub